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P/2107-187

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of
Knut M. RAPP et al.
Serial No.: 09/928,721 Group Art Unit: 1761
Filed: August 13, 2001 Examiner: A. Corbin
For: SUGAR-FREE PRODUCTS WITH IMPROVED CHARACTERISTICS

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION OF JÖRG KOWALCZYK UNDER 37 C.F.R. §1.132

Sir:

I, **JÖRG KOWALCZYK**, declare that:

1. I reside at Franz-Schubert-Straße 24, 67304 Eisenberg-Steinborn, Germany. My background is as a chemist and I presently work for Südzucker AG, Mannheim/Ochsenfurt, Germany. I have been the head of the department "Product Development" since October 1997. I have been engaged in different research activities in the field of the production of Isomalt and Isomalt based sweetener products.

2. The following study was undertaken by me or under my supervision to study the effect on various physical properties as outlined below of a coated product when varying the ratio of 1,6-GPS (6-O-α-D-glucopyranosyl-D-sorbitol) to 1,1-GPM (1-O-α-D-glucopyranosyl-D-mannitol) in the coating of said coated product.

3. To this end, two coated products were prepared. The first is a comparative product prepared according to Example 1 (using Table I for the gum center composition) of the cited reference Reed et al. (WO 95/07622), wherein a sugarless chewing gum center was prepared by mixing an insoluble base with calcium carbonate and glycerine. This mixture was then combined with sorbitol over a short period of time. Encapsulated aspartame was then added to the mixture. Finally, a peppermint flavoring agent was added and the components were mixed to substantial homogenity. The composition of the chewing gum center was as follows:

Component	Weight percent
Sorbitol	48.06
Base	33
Calcium Carbonate	13.0
Glycerin	4.0
Peppermint Flavor	1.8
Aspartame	0.14

The above gum center is then coated with a hydrogenated isomaltulose syrup which provides a coating of 48.5 % hydrogenated isomaltulose (i.e. PALATINIT containing 50 mol% 1,6-GPS and 50 mol% 1,1-GPM), 46% erythritol, 3.4% gum arabic, 1.2% peppermint flavor and 0.9% titanium dioxide then polished with carnauba wax. The first coating solution (used for the first 20 coats) contained a 75% hydrogenated isomaltulose solids syrup, gum arabic as a 33% aqueous solution, and titanium dioxide. The second coating solution (used for the last 20 coats) contained a 65% erythritol solids syrup, gum arabic as a 3% aqueous solution and titanium dioxide. Forty coats in total were applied, with half the flavor added at the 5th coat and the other half at the 10th coat.

4. An experimental product according to the present invention was prepared exactly as described in Section 4 above with the only exception being the use of enriched Isomalt containing 70 mol% 1,6-GPS and 30 mol% 1,1-GPM instead of the hydrogenated isomaltulose (i.e. PALATINIT containing 50 mol% 1,6-GPS and 50 mol% 1,1-GPM) in the coating.

5. The resulting comparative and experimental chewing gums were evaluated in a sensorial evaluation for sensorial hardness, loudness, cracking behavior and sensorial crunch. Sensorial hardness was rated from 0 (soft dragee, hardly palatable employing Stimorol from the Dandy company as a standard) to a value of 5 (pleasantly hard, using Happy Dent White from the Perfetti Company as a standard). Loudness was rated on a scale from 0 (very faint and heard with difficulty using Stimorol as a standard) to a value of 5 (pleasantly loud cracking sound using Happy Dent White as a standard). The cracking behavior was evaluated on a scale from 0 (very coarse particles - separated from center - using Odol-med 3 from the SmithKline Beecham company as a standard) to a value of 5 (small but palpable particles using Dentyne Ice from the Warner Lambert Company as a standard). Sensorial crunch is a number between 0 (bad) and 5 (very good) calculated by adding 40% of the hardness value, 40% of the loudness value and 20% of the cracking behavior value. The results are set forth in the table below. In addition, the hardness and crunch number obtained in a texture profile analysis (TPA) were determined. Finally, the visual impression of the gums were evaluated. The results are set forth in the following table:

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		Comparative (prior art)	Experimental (present invention)
Sensorial Attribute	Hardness	2,0	3,5
	Loudness	1,5	3,5
	Cracking Behavior	2,5	4,0
	Crunch	1,9	3,6
Texture Profile Analysis (TPA)	Hardness [N]	17	33
	Crunch Number	8	19
Visual Appearance		smooth	smoother

6. In summary, the above data indicate that increasing the ratio of 1,6-GPS over 1,1-GPM to more than 57 to 43 unexpectedly results in significantly improved sensorial attributs, texture profile and visual appearance.

7. I further declare that all statements made herein are made of my own knowledge and are true except for those statements made on information and belief, which are believed to be true, and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of this declaration of this application and any United States patent issuing therefrom.

Dated: 02/24, 2004

Jörg Kowalczyk

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